

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SG03/00223

|   |   |   |
|---|---|---|
| <b>A. CLASSIFICATION OF SUBJECT MATTER</b>  |   |   |
| Int. Cl. <sup>72</sup> H01L 21/4763, 21/285, 23/36, 23/367, 23/373, 31/024, 31/052, 31/18, H01S 5/024   |   |   |
| According to International Patent Classification (IPC) or to both national classification and IPC   |   |   |
| <b>B. FIELDS SEARCHED</b>   |   |   |
| Minimum documentation searched (classification system followed by classification symbols)   |   |   |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched   |   |   |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)<br>file dwpi: limit /ic h01l-021 or h01l-023 or h01l-031 or h01l-033 or h0 1s-005, gan or (gallium (w) nitride), sapphire or gaas or inp or si, epitax+ or epilayer?, copper or cu, adhesion (w) layer, seed (w) layer, (heat or thermal+) (s) (sink+ or spread+ or conduct+ or dissipat+ or remov+), laser or led? or (light (w) emitting), ohmic (w) contact, active (w) region, thick, electroplat+ or electrodeposit+, lift (w) off, (host or temporary or remov+) (2d) substrate  |   |   |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>   |   |   |
| Category*   | Citation of document, with indication, where appropriate, of the relevant passages                  | Relevant to claim No.   |
| A   | US 6562648 B1 (WONG et al.) 13 May 2003<br>Column 4, lines 3-17; figures 1a-1g                      |   |
| A   | US 2003/0064535 A1 (KUB et al.) 3 April 2003<br>Page 2, paragraphs [0032]-[0035]; figures 1(a)-1(d) |   |
| A   | US 6448102 B1 (KNEISSL et al.) 10 September 2002<br>Column 2, lines 5-38; figures 11a-11f           |   |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex   |   |   |
| <p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p> |   |   |
| Date of the actual completion of this international search<br>2 December 2003   |   | Date of mailing of the international search report<br>09 Dec 2003                 |
| Name and mailing address of the ISA/AU<br>AUSTRALIAN PATENT OFFICE<br>PO BOX 200, WODEN ACT 2606, AUSTRALIA<br>E-mail address: pct@ipaustalia.gov.au<br>Facsimile No. (02) 6285 3929  |   | Authorized officer<br><br><b>RAJEEV DESHMUKH</b><br>Telephone No : (02) 6283 2145 |

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| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT |   |                       |
|---|---|-----------------------|
| Category <sup>a</sup>                                 | Citation of document, with indication, where appropriate, of the relevant passages                | Relevant to claim No. |
| A   | US 6210479 B1 (BOJARCZUK et al.) 3 April 2001<br>Column 3, line 18–column 4, line 52; figures 1–6 |                       |
| A   | EP 1326290 A2 (XEROX CORPORATION) 9 July 2003<br>Abstract; figure 2                               |                       |
| E, A  | US 6627921 B2 (WONG et al.) 30 September 2003<br>Column 4, lines 10–23; figures 1a–1g             |                       |

## INTERNATIONAL SEARCH REPORT

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Information on patent family members

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This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent Document Cited in Search Report |            |               | Patent Family Member |            |               |
|--|------------|---------------|----------------------|------------|---------------|
| US                                     | 6562648    | JP 2002076523 | US                   | 2003122141 |               |
| US                                     | 2003064535 |               |                      |            |               |
| US                                     | 6448102    | JP 2000196197 | US                   | 6365429    |               |
| US                                     | 6210479    | JP 10270712   | JP                   | 2000252224 | JP 2002198539 |
|  |            | US 5946551    | US                   | 5981970    | US 6344660    |
|  |            | US 6344662    |                      |            |               |
| EP                                     | 1326290    | CA 2414325    | JP                   | 2003234542 | US 6455340    |
| US                                     | 6627921    | JP 2002076523 | US                   | 6562648    | US 2003122141 |
|  |            |               |                      |            | END OF ANNEX  |